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privileges gained by wealth. It remains for the American people to establish, by means of their ideals and temples to Liberty, the nobility of character as expressed by service to the welfare of all, through the realization of the brotherhood of man.

"I ask not wealth, but power to take
And use the things I have aright,
Not years, but wisdom, that shall make
My life a profit and delight.

"I ask not that for me the plan
Of good and ill be set aside,
But that the common lot of man
Be nobly borne and glorified."

H. K. BUSH-BROWN

*THE SCIENTIFIC STUDY OF THE COLLEGE STUDENT*¹

It is worthy of note that, while the critics of the college have been able to adduce facts as the basis of their unfriendly opinions, the colleges have, for the most part, been unable to point to any considerable collection of accurate data regarding their own present effectiveness. It is, of course, quite true that the deductions drawn from their facts by these unfavorable critics are oftentimes manifestly more imposing than the factual structure can properly stand. It is also true that along certain detached and scattering lines this college or that has been able to point with pride to a small amount of accurate material more or less scientifically collected. Speaking broadly, however, the statement first made is true. It is perhaps to be acknowledged that the introduction of the larger use of facts into the measurement and development of college values will make education somewhat less interesting, for it will reduce the range of philosophical discussion and the application of personal opinion. Still, if the signs of the times are at all to be believed, the

day is fast approaching when the colleges and universities will be using facts and the scientific method as much in the direction of their educative processes, as a whole, as they already are using them in their laboratories and classrooms.

Secretary Furst, of the Carnegie Foundation, has said that there should be little talk of efficiency in college work until something has been done to make use of the enormous collection of data already possessed by the colleges of the country in the records of the hundreds of thousands of students who have passed through the four years of the campus and into the work of the world. Certainly there does exist a large body of facts worthy of study in connection with the administration of the present-day college. It seems to me rather doubtful, however, whether these facts are as likely to be given the attention they deserve as those collected according to some new method and with closer reference to the various problems to be solved in connection with the present and the future generations of students.

If this question is to be answered in the affirmative, it raises another. Shall the information for measuring the effectiveness of the college work with the present generation be attacked piece-meal—one problem one year, another the next, one phase in one college, another phase in another—or shall each college endeavor to conduct a study that shall be for it at once fundamental, broad, permanent and, in addition, as nearly scientific as the twentieth century permits?

A study possessing these dimensions has already been proposed by one of the greatest educators America has ever known. In 1899, President Harper, of Chicago University, recommended what he called the "scientific study of the student." Said that educational path-finder:

¹ Address before the Section of Education at the Cleveland meeting of the American Association for the Advancement of Science.

This study² will be made (1) with special reference to the student's character—to find out whether he is responsible, or careless, or shiftless, or perhaps vicious; (2) with special reference likewise to his intellectual capacity—to discover whether he is unusually able, or bright, or average, or slow, or dull; (3) with reference to his special intellectual characteristics—to learn whether he is independent and original, or one who works largely along routine lines; whether his logical sense is keen, or average, or dull; whether his ideas are flexible, or easily diverted, or rigid; whether he has control of his mind, or is given to mind-wandering, and to what extent he has power to overcome difficulties; (4) with reference to his special capacities and tastes—to determine whether these are evenly balanced, or whether there exists a marked preference for some special subject; whether he prefers those aspects of study which are of the book type, or those of a mechanical or constructive type, or those of a laboratory type; whether his special gift lies along lines of an esthetic character, or those of a literary or scientific or philosophical character; whether his special aptitude, supposing it to be in the literary field, lies in criticism, or interpretation, or creative work; whether his preference in scientific lines is for the observational or the experimental side of work, or for general principles; and, finally (5) with reference to the social side of his nature—to judge whether he is fond of companionship; whether he is a leader or a follower among his fellows; whether he is a man of affairs, or devotes himself exclusively to his studies; the character of his recreation; the way in which he spends his leisure hours; whether he is compelled to work for self-support, or for the support of others.

These details, among others, will be secured in various ways; in part from preparatory teachers, in part from parents, in part from the student himself, in part also from careful observation of his work in the first months of his college life. It will be no easy task; but the difficulties will not be greater than its importance.

Such a diagnosis would serve as the basis for the selection of studies; it will be of paramount value in determining the character of the instructor under whom he should study; it will also determine the character of all advice given the student and of any punishment administered; likewise, it will determine in large measure the career of the student—will help him to find himself and decide upon his life-work.

² "The Trend in Higher Education," pp. 321-325.

The object of this paper is to recommend in detail the plan thus proposed. It is urged not as possessing the virtue of a dynamic in itself, but simply as a testing of the personal dynamics of the college to effect the purposes for which it was established in the hope of making practicable a wiser direction of those personal dynamics.

First of all, the college will need, in order to determine its effectiveness, will it not? to discover the position of the student at the moment of the beginning of his course. In order to accomplish this, it will wish to send out to the student's teachers in the secondary schools a blank asking for much other information than that at present desired. This other information would cover, as far as found practicable, the mental, moral and temperamental characteristics of the student, though in a less detailed manner than that suggested in the blank to be exhibited. Inquiry could also wisely be made regarding the educational and moral advantages of the student's parents and family, as well as the family's social, and perhaps also its economic, status.

At the same time a blank of a more intimate sort could be submitted to the parents, and also, in the case of a small town, to the local minister or the librarian, asking information regarding the personal characteristics of the student in question—whether, for instance, he is ambitious, energetic, serious-minded, truthful, of a plodding or intuitive mind, possessing marked self-control, etc. In the cities the obtaining of such information might conceivably be difficult; in the small towns, however, there is a wealth of personal interest in the chosen few who go to college which will be happy to make itself useful the moment colleges become organized to take advantage of it.³ The smaller towns and cities,

³ At the University of California facts of the kind suggested are obtained in order to facilitate the assignment of the proper advisory officer.

also, will admit of study as to their educational and moral characteristics by the officers charged with the recruiting of students—a study which will be found of financial as well as educational value.

To a student's rating as thus obtained from his friends would be added that obtained from the student himself at the time of entrance regarding such matters as purpose in attending college and strongest influence thereto, aim in life, favorite books, chief historical admirations, etc., as well as by a series of tests. Doubtless some adaptation of the Binet and other tests such as those of Professor Thorndike could be arranged by the department of psychology which would give in more or less approximate form the student's mental status and characteristics. To this there could very wisely be added by the same department the testing of the student's range of information by means of Professor Whipple's list of key words. With very little modification and extension, also, the present physiological examination could be made to include certain simple tests for the time and form of reaction to tactile and other sensations and perceptions—*e. g.*, color, form, sound, etc.

These tests, when assembled, would serve as an indication of the starting point for the agencies of the higher educative processes. Reference to this starting place would at least make more definite and exact the controversy with the unfriendly critics of higher education who assert that nothing definite can be claimed by the college, simply for the reason that its human material is so selected that a large proportion of the effectiveness of its graduates is due to that selection rather than to its institutional efficiency.

With the starting point thus determined, the measurement of the effectiveness of the college's activities becomes more serious as

well as more active. Toward this end, also, there can be used a body of persons whose judgment should be better trained for the work than those consulted in connection with the other preliminary measurements suggested. It can surely not be too much to ask that every teacher should be asked by the administration to fill in for each student a blank submitted to him in some such form as the accompanying card. I have had the courage to outline such a card simply for the reason that at this point the whole question of the feasibility of the proposed scientific study of the college seems to me to hinge less upon the matter of psychology than of mechanism. In the minds of many authorities who have been consulted, that is, the practicability of the plan depends not so much upon its worthiness as upon its ability to secure the cooperation of the teacher, in competition with the other interests seeking his attention. Perhaps this will be accomplished all the better, accordingly, if the description of the student as called for by the card is not made of such a nature as to appeal only to the psychologist. At any rate, the plan is, apparently, likely to prove of practical value in proportion as it avoids the necessity for extra mechanical work at the hands of the teacher, who is very properly expected to be more interested in other things than the writing of needless words upon a card. You will notice, therefore, that our proposed blank is supposed to go to the teacher with the student's name, classification and other details above the double line already written upon it before it leaves the administrative office.⁴ You will notice, further, that the card submitted—as also the other questionnaires recommended—is supposed to be filled out almost entirely

⁴It should be true of every one of the blanks used that persons asked to fill them should not be required to write a single word which the administrative office is in a position to write itself.

by the use of checks (\angle), these checks to be supplemented by one or two general phrases under the caption "Remarks." A very little study by the administrative officer will detect plenty of ways by which they can save for the teachers enough time to offset the demand made by these cards.

In order, at the same time, to facilitate its own operations, the administrative office will plan to prepare, at one writing, with the help of a manifolding machine, the blanks required by all the different teachers during one year for each student, inserting separately only the study-classification, *e. g.*, "Soc. 17." On receiving them back from the teachers they can be assembled in folders and their material collated upon sheets—prepared also at one writing—for the use of the departmental dean, the disciplinary dean and the other advisory officers. On this sheet there should also be room for indicating the reports of the various entrance tests, in addition to the grades reported by the registrar or the secretary, and in addition, further, to the student's record in various student activities as reported by the officer charged with that responsibility. Every dean and advisory officer of any kind would, accordingly, have in his possession a complete showing of the student's whole life in college as well as the rating of a more general sort given him by his secondary teacher and his home friends, together with the more scientific rating resulting from the test on entrance. As his course advanced, more and more of this material should be shown on the upper parts of the blanks submitted to the teacher.

The advice and the whole range of attention given the student, therefore, at any time would be based upon this survey of his whole personality. Undoubtedly the attention given him by the various advisory officers would be immensely more valuable than is conceivable under the re-

cent and present method of parcelling out a limited number of students to a number of teachers in the vain hope that an occasional quarter-hour or half-hour of conversation will serve to put the teacher in the position of an expert for the direction of the student's present activities and future career.

Is it going too far to take seriously President Harper's belief that "such a diagnosis would serve as a basis for the selection of studies"? Is it not conceivable that, at least to some extent, in the recommendation of studies, the advisers could have in mind the correction of the defects shown on the collated report? If, for instance, all reports indicate that a certain student possesses an able mind but refuses to use it carefully, is what might be called a disorderly thinker simply from pure mental laziness, could the adviser not wisely emphasize the value of mathematics or certain other of the exact sciences? Similarly, for the student who is a plodder, taking each step conscientiously at a time, but lacking the imagination with which to take a half or a whole flight of mental stairs at a leap, could not a good teacher of history, economics or other study calling for broad grasp and ability to generalize be recommended very strongly, if not with compelling power?

In that event each teacher could legitimately be expected to have in mind these uses of his teaching of a subject in addition to its usual informational or disciplinary values. Or, if that seem unfeasible, the teacher might be asked to bear in mind in connection with each member of his classes the particular mental aspect shown by the cards received from the administration office to be of greatest interest or of greatest need on the part of that student.

Whether such a use in the selection of studies is possible or not, there can be no

doubt that the diagnosis would be found tremendously helpful—indeed absolutely necessary—to that newest officer in the college world—I mean the vocational adviser. If he is to make himself genuinely useful to the student he will find it essential to possess himself of many more facts than can be obtained in any number of conferences with the student. It will be noticed, I venture to prophesy, that the vocational adviser, within six months after his election, will raise a cry for facts that will not be stilled until every part of the whole educational system—including the secondary schools—is busy handing them in perhaps in much the way here proposed. It is, as a matter of fact, significant that one of the few institutions in the country that have already been using a system comparable to this, is a school where the claim of the vocation is strong, the Massachusetts Institute of Technology. There, in addition to the gathering of detailed facts regarding every student, at the hands of his instructors, a stenographer is present at every faculty meeting where names of students are mentioned to record any remark made about them. Everything ever said or written concerning a student is gathered together for the use of the officer in charge of the placing of graduates. As a result of this the dean of the institute has assured the writer that the officers have enjoyed a remarkable success in fitting their graduates into positions making unique requirements. Doubtless for the same reason an approximation of the same plan has recently been proposed for the adoption of the Springfield Y. M. C. A. Training School by the committee charged with the responsibility of testing and increasing the effectiveness of that institution.

Further there will be added to the facts already collected the showing of the intellectual and general status of the student

at graduation. These tests can be chosen from, and related to, those made of the entering freshman in whatever proportion and extent seems desirable. Undoubtedly, the application of Professor Whipple's "information range finder" would be particularly significant. If the student shows a much greater familiarity with such terms as "southpaw" or "snapback" than with "cytology" or "Pythagoras," it may be held to indicate that the realm of athletics had been more suggestive than that of science or philosophy. In any event, the tests chosen should serve as an approximate measurement of the advance made in scholarship, mentality, character, temperament and social qualities within the four years of the college.

Only an approximation, of course. The real value of the years could only be shown after the secretary in charge of alumni relations had made it his business to secure in legitimate and effective ways some general measurement of the effectiveness of the former student as a person and a citizen. It is quite likely that the next college officer to follow the vocational adviser will be such a secretary for alumni relations, charged with the very serious and statesmanlike responsibility of making the college mean as much as possible to the graduate and the graduate to the college. Possibly the vocational adviser would himself be this officer, traveling part of the year in order to consult with commercial, professional and other leaders, with successful graduates and with unsuccessful ones—all for determining in what ways the college stands in need of improvement as a developer of abilities, interests and viewpoints required for the meeting of the needs of the world.

When the report of such an officer has been turned in and put alongside the material already mentioned, then the college

will have the right to feel that it is conducting a study sufficiently scientific, serious and fundamental to be worthy of the seriousness and importance of its educational responsibilities. Then and only then will it possess a body of facts from which it can gain genuine light with regard to such problems as the following:

I. The relation between (*a*) the college course and "success in life" (however defined), (*b*) between scholarship and success, (*c*) between particular fields of study and success, etc. II. The extent to which the college course modifies the student's (1) character, (2) intellectual capacities and characteristics, (3) social and (4) moral nature, (5) life plans; with (6) the general direction of such modifications. III. The extent to which (*a*) it extends the fields of interest and information brought to college, and (*b*) adds new fields. IV. The approximate comparative importance as factors in these modifications of (*a*) teachers, (*b*) subjects, (*c*) student activities, (*d*) companions, etc. V. In comparison with the college, the influence on scholarship in college and on success in life of such elements of the home and preparatory environment, as (*a*) social, economic and educational status of parents (including the size of the family), (*b*) the geographical location, size and chief characteristics of the home town or city—especially in its general educational and moral agencies, also (*c*) the educational standards and methods of the secondary school.

Only then will every month and every year and every person connected in any way with the educative processes be made to contribute its proper quota to the wisdom which the present should receive from the past and the future demands of the present, a quota of which our educational generation has been cheated by an unorganized and unscientific past.

Only then, also—and it is to be considered one of the most important products, if only a by-product of the whole plan—will there be an organized way for making evident the distinction between the college and the university teacher. For if the blanks coming from any one teacher are found invariably to indicate a complete lack of interest in, and just judgment of, the pupil, it will indicate that, so far as the college is concerned, that teacher has probably not sufficient human interest to be worthy of his collegiate responsibility, though he may be entirely worthy of the work of interpreting his field within the less broad and general channels of the university.⁵

Who will attempt to estimate the value of a five-year study along the line suggested as conducted by a number of institutions, to say nothing of its value if conducted simply by one institution? Since President Harper proposed the plan, the world has made an amazing advance in the adoption of the scientific method. After all, the scientific method is nothing more or less than the collecting of facts and their use in the accomplishment of desired ends. In this use the facts are proved as well as taken advantage of. The period in which we live, as the result of the spread of this scientific method, may well be called the "pragmatic period"—owing allegiance, that is, not so much to the reign of law as to the reign of results. No one believes that the college is going to be found permanently unable to adapt itself not only to life, but to development and growth in such a period. But this means that it is

⁵ "The college is the place for the student to study himself—and for the instructor to study each student and to point out his weak and his strong points. . . . The university is for men who have come to know themselves . . . to study in the line of their chosen calling." President Harper, "Trend in Higher Education," p. 324.

only a question of time until the college discovers its delinquency in having failed to observe that, while it, more than almost any other institution known, is charged with the development of broad human values, it is doing less to study these values and the means of their development in a broad, yet scientific, manner than are many commercial institutions not supposed to be at all concerned with human factors.

Can we not here to-day among ourselves "highly resolve" that President Harper shall not have lived and shall not have spoken in vain when he said regarding the plan thus described to you, "This feature of twentieth-century college education will come to be regarded as of greatest importance, and fifty years hence"—shall we not make it fifteen?—"will prevail as widely as it is now lacking. It is the next step in the evolution of the principle of individualism, and its application will, in due time, introduce order and system into our educational work where now only chaos is to be found."

CHARLES WHITING WILLIAMS

OBERLIN COLLEGE

THE AMERICAN MINE SAFETY
ASSOCIATION

THE annual meeting of the American Mine Safety Association composed of leading coal and metal mine operators, mining engineers, mine-safety engineers, and mine surgeons will be held in Pittsburgh, Pa., September 22-24.

This association, which held its first meeting a year ago, has for its purpose a reduction of the number of accidents in the mines and quarries (3,602 in the year 1911) and the alleviation of the more than 60,000 men who are injured each year.

Following the recommendations of the Bureau of Mines in the last three or four years many mining companies have organized rescue corps and first-aid teams, and as a result a number of different methods of procedure following mine explosions and fires and in the

caring for the injured have developed. The men who gathered a year ago to form this association felt there was great need for greater uniformity in the work of the rescue and first-aid crews and at that time some very important recommendations were made.

This second meeting, which has been called by Mr. H. M. Wilson, of the Bureau of Mines, chairman of the executive committee of the association, promises to take up and discuss a number of the problems that have arisen in both the rescue and first-aid work. The members of the association declare that greater progress can be made in saving life and in reducing the seriousness of injuries by the adoption of the proposed standard methods.

The program will include a mine-rescue and first-aid contest at Arsenal Park on September 22; in the evening a reception to the members and motion-picture lecture on the mining industry. On the second day the opening session of the association will be held in the morning and a report of the executive committee will be made on the proposed constitution of the society. In the afternoon there will be an explosion in the experimental mine of the Bureau of Mines at Bruceton, Pa., to which all the members will be invited to be present. On September 24, the third day, there will be a business session at the hotel and a selection of officers. In the afternoon members will visit the experiment station of the Bureau of Mines at 40th and Butler Sts., Pittsburgh, Pa.

THE CROCKER LAND EXPEDITION

THE Crocker Land Expedition (George Borup Memorial) sailed from the Brooklyn Navy Yard, New York, in the Newfoundland steam sealer *Diana*, on July 2, with the major portion of its equipment aboard. The ship called at Boston for 13,000 pounds of pemmican and other stores and sailed for Sydney, N. S., on July 6. Sydney was reached in the morning of the 9th, and there 40,000 pounds of dog biscuit, 13,000 feet of lumber, 40 pairs of snow shoes and 335 tons of coal were taken aboard. The *Diana* left Sydney on the 13th loaded to the rails, but she had yet to call at Battle Harbor, Labrador, to take up the 30-foot power